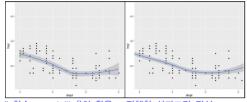


coord_cartesian()의 활용 : XY축 범위의 조정

scale에 의한 XY축 범위의 조정
scale 함수의 일반적인 형태: scale *1* *2*()
1: 수정하고자 하는 시각적 요소 (cotor, x, y, fill 등등)
2: 적용되는 scale 지칭 (discrete, continuous 등등)
ex. 연속형 X변수의 범위 (3.6) 으로 수정: scale_x_continuous(limits=c(3.6))
ex. 연속형 X축의 라벨 변경: scale_x_continuous(name= "Engine")
XY축 조정 비교

 $\begin{array}{ll} mpg \%\% \ ggplot(aes(x=displ,y=hwy)) + geom_point() + geom_smooth() + xlim(3.6) \\ mpg \%\% \ ggplot(aes(x=displ,y=hwy)) + geom_point() + geom_smooth() + coord_cartesian(xlim=c(3.6)) \\ \end{array}$



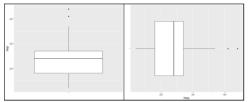
함수 coord_flip()의 활용 : 평행한 상자그림 작성 mpg %)% ggplot(aes(x=class,y=hwy)) + geom_boxplot()

mpg %)% ggplot(aes(x=class,y=hwy)) + geom_boxplot() + coord_flip() # 90도 회전



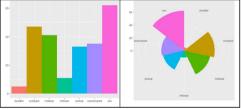
일반적으로 geom_boxplot()에는 x와 y모두 필요, x에는 하나의 값을 지정

mpg %)% ggplot(aes(x="",y=hwy)) + geom_boxplot() + xlab("")
mpg %)% ggplot(aes(x="",y=hwy)) + geom_boxplot() + xlab("") + coord_flip()



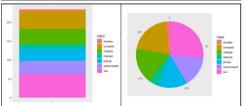
coord_polar()의 활용 : Coxcomb 그래프 · 각 조각의 각도 : theta= "x" 로 지정 -> 동일한 각도 · 각 조각의 반지름 : 각 막대의 높이에 비례

myplot (- ggplot(mpg, aes(x=class, fill=class)) + geom_bar(show.legend=FALSE, width=1) + labs(x="",y="")



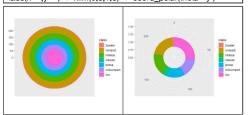
coord_polar()의 활용 : Pie 그래프

 $\label{eq:myplot2} $$ myplot2 (-mpg %)\% ggplot(aes(x=",fill=class)) + geom_bar(width=1) + labs(x=",y=") myplot2 + coord_polar(theta="y")$



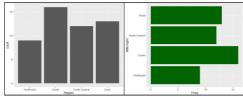
coord_polar()의 활용 : Bullseye 그래프, 도넛 그래프

 $\label{eq:myplot2} \begin{array}{ll} \text{myplot2} + \text{coord_polar(theta="x")} \\ \text{ggplot(mpg, aes(x=1, fill=class))} + \text{geom_bar(width=0.3)} + \\ \text{labs(x="",y="")} + \text{xlim}(0.5,1.5) + \text{coord_polar(theta="y")} \\ \end{array}$

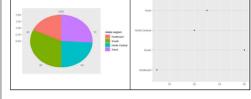


막대그래프

as,data,frame(state,region) %)% ggplot(aes(x=state,region)) + geom_bar() + labs(x="Region") table(state,region) %)% as,data,frame() %)% ggplot(aes/s-state,region,y-Freqi)) + geom_bar(state="identity",fill="steelblue") + coord_filp()

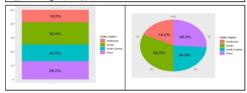


Pie 그래프 & Cleveland 점 그래프



Pie 그래프에 백분율 라벨 추가하기

pct (~ table(sptate,region) %)% as,data,frame() %)% mutate(pct=scales::percent(Freq/sum(Freq)))
myplo(3 (~ gpg)of(pct, aes/x=""y=Freq,fill=state,region)) + geom_bar(width=1,stat="identity") +
labs(x="",y="") + geom_text(aes(label=pct),size=5,position=position_stack(viust=0,5))
myplo(3 + coord_polar(theta=y"))



연습문제

car (- mutate(MASS::Cars93,carSize=cut(EngineSize, breaks=c(min(EngineSize),1,6,2,0,max(EngineSize)), labels=c("Small","Mid","Large"))) %)% filter(!is.na(carSize)) ggplot(car,aes(x=carSize)) + geom bar()

 $\label{eq:group_by(car,carSize)} $\%$ summarise(Freq:-n(l): %)% mutate(pct=scales::percent(Freq)sum(Freq))): %% $$ggbid(ass),c":_y=Freq,iil=carSize)) + geom_bar(stat="identity") + geom_bar(ass(abet=pct),size=5,position=position_stack(vjust=0,5)) + coord_polar(inter="y") + geom_bar(ass(abet=pct),size=5,position=position_stack(vjust=0,5)) + geom_bar(ass(abet=pct),size=5,position=pct) + geom_bar(ass(abet),size=5,position=pct) + geom_bar(ass(abet),size=5,position=pct) + geom_bar(ass(abet),size=5,position=pct) + geom_bar(ass(abet),size=5,position=pct) + geom_bar(ass(abet),size=5,position=pct) + ge$

group_by(car,carGize) %)% summarise(Freq=r(1)) %)% ggpb(laes(x=Freq,y=carGize)) + geom_point() + labs(x=",y=") + theme(panel,grid,major,y=element,Line(linetype=2_color='darkgray'))



with(women, stem(height))

x (- c(98,102,114,122,132,144,106,117,151,118,124,115) stem(x)

stem(x, scale=2)

상자그림의 옵션

 $\label{eq:data-alltime_movies_package="UsingR"} $$ $\operatorname{data-alltime_movies_aes(x=",y=Gross)} + \operatorname{geom_boxplot(outlier.shape=NA)} + \operatorname{labs(x=")} + \operatorname{geom_point(cot="red")} + \operatorname{geom_boxplot(outlier.shape=NA)} + \operatorname{labs(x=")} + \operatorname{geom_pitter(cot="red",width=0,01)} $$$



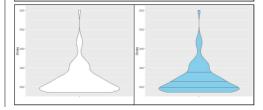
이상값으로 표시된 자료 확인

my_box <- boxplot(alltime,movies\$Gross, plot=FALSE) my_box\$out

alltime (- as tibble(alltime,movies) %)% rownames_to_column(var="Movie,Title") top_movies (- alltime %)% filter(Gross %in% my_box\$out)



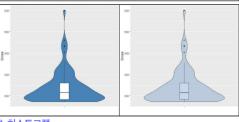
ggplot(alltime.movies, aes(x="",y=Gross)) + labs(x="") + geom_violin() ggplot(alltime.movies, aes(x="",y=Gross)) + labs(x="") + geom_violin(draw_quantiles=c(0.25,0.5,0.75),fill="skyblue")



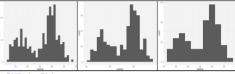
Violin plot 가 boxplot을 함께 작성

 $\label{eq:ggplot} $$ ggplot(alltime,movies, aes(x="",y=Gross))+labs(x="") + geom_violin(fill="steelblue") + geom_boxplot(width=0,1) $$$

ggplot(alltime.movies, aes(x="",y=Gross))+labs(x="") + geom_boxplot(width=0.1) + geom_violin(fill="steelblue",alpha=0,3)



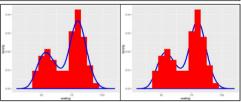
ggplot(faithful, aes(x=waiting)) + geom_histogram()
ggplot(faithful, aes(x=waiting)) + geom_histogram(bins=20)
ggplot(faithful, aes(x=waiting)) + geom_histogram(binwidth=5)



- p \langle ggplot(faithful, aes(x=waiting)) + geom_density(fill="skyblue") p + xlim(30,110)
- p + xlim(30,110) + geom_rug()

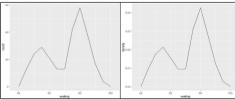


 $\begin{array}{l} p \ (-\ gg)lot(faithful,\ aes(x=waiting,y=,\ density,.)) \\ p \ +\ geom_histogram(fill="red",\ binwidth=5) \ +\ geom_density(col="blue",size=2) \ +\ xiim(30,110) \\ p \ +\ geom_density(col="blue",size=2) \ +\ geom_histogram(fill="red",\ binwidth=5) \ +\ xiim(30,110) \\ \end{array}$



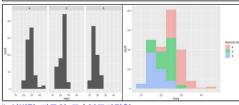
pp (- ggplot(faithful, aes(x=waiting)) pp + geom_freqpoly(binwidth=5)

pp + geom_freqpoly(aes(y=..density..),binwidth=5)



이변량 자료의 히스토그램

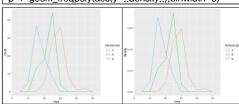
 $\begin{array}{ll} mpg_1 & (-mpg \%)\% & \text{filter(cyt|=5)} \\ ggplot(mpg_1, aes(x=hwy)) + geom_histogram(binwidth=5) + facet_wrap(\sim cyt)} \\ ggplot(mpg_1, aes(x=hwy,fill=factor(cyt))) + geom_histogram(binwidth=5,alpha=0,5) \\ \end{array}$



이변량 자료의 도수분포다각형

p <- ggplot(mpg_1, aes(x=hwy, col=factor(cyl)))
p + geom_freqpoly(binwidth=5)</pre>

p + geom_freqpoly(aes(y=..density..),binwidth=5)



이변량 자료의 상자그림

$$\begin{split} & \text{ggplot(mpg_1, aes(x=factor(cyl),y=hwy))} + \text{geom_boxplot()} + \\ & \text{labs(x="Number of Cylinders", y="MPG")} \end{split}$$

